

**II B.Tech I Semester Regular Examinations, November 2006**

**APPLIED CHEMISTRY AND BIOCHEMISTRY**

**(Bio-Medical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions  
All Questions carry equal marks**

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1. (a) Define electrolyte and non-electrolyte with suitable examples.  
(b) Define strong and weak electrolytes  
(c) Explain Arrhenius ionic theory along with postulates. [5+5+6]
2. (a) How is bakelite manufactured? How are its raw materials made commercially?  
(b) Describe the applications of Teflon. [8+8]
3. (a) What is a lubricant? How are lubricants classified? Give Examples.  
(b) Give, with examples, the mechanism of
  - i. Hydrodynamic
  - ii. Boundary lubrication. [8+4+4]
4. (a) Describe the method carried out in fraction of cell organelles, carried out by Centrifugation method.  
(b) Discuss in detail, about the Oxidative Phosphorilation. [8+8]
5. (a) Explain the kinetics of multisubstrate reactions.  
(b) Explain the effect of temperature and PH as enzymic reactions. [8+8]
6. List the excretory products of metabolism. Describe how they are formed in the body. [16]
7. (a) How do you measure the acid-base balance in patients?  
(b) What is the clinical significance of elido base balance? [8+8]
8. Give an account of the general laboratory methods adopted for measuring any three biochemical constituents of blood. [16]

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1. (a) Explain the terms:
  - i. Specific Conductance and
  - ii. Equivalent conductance.(b) Describe an experimental method to determine the equivalent conductance of an electrolyte. [4+4+8]
2. (a) How is Vinyl Chloride manufactured commercially?  
(b) Describe the preparation, properties and applications on novolac resin. [8+8]
3. (a) Describe the titrimetric method of determination of chloride ion in water.  
(b) Describe the gravimetric method of determination of sulphate ion in Water.  
(c) Describe the Winkler's method of determination of dissolved oxygen in a sample of water. [5+5+6]
4. Write a short note on:
  - (a) Redox potential.
  - (b) Plasma Membrane.
  - (c) Chloroplasts. [6+5+5]
5. (a) What is the chemical nature of enzymes? And how are they isolated?  
(b) Explain the specificity of enzymes with suitable examples. [8+8]
6. Define genetic code and discuss its characteristic features. Discuss about Sigma factor and Replication fork. [16]
7. Write short notes on:
  - (a) Ultra centrifugation
  - (b) Chloride shift
  - (c) Urine chemistry. [6+5+5]
8. Write short notes on:
  - (a) Inorganic constituents of blood
  - (b) Transaminases
  - (c) Glucosuria. [5+5+6]

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1. Write short notes on any FOUR
  - (a) Cell constant
  - (b) Galvanic Cell
  - (c) Conductivity
  - (d) Copolymerization
  - (e) Ziegler-Natta Polymerization. [3+3+3+3+4]
2. (a) Differentiate between addition and condensation polymerization with suitable examples.
- (b) Describe the manufacture of polyethylene by the free-radical process. [8+8]
3. (a) How will you determine the alkalinity of a water sample containing hydroxide and carbonate ions? Describe the experiment.
- (b) Describe the type and calculate the amount of alkalinity with a suitable example. [8+8]
4. Write short notes on the following:
  - (a) Gram (-) organisms
  - (b) Phospholipids
  - (c) Plastids
  - (d) Endosomes. [4+4+4+4]
5. What is an enzyme? What is its chemical nature? Explain how the enzymes accelerate reactions. [16]
6. Describe briefly the metabolism of cholesterol and state its physiological importance with reference to atherosclerosis. [16]
7. Write short notes on:
  - (a) Ultra centrifugation
  - (b) Chloride shift
  - (c) Urine chemistry. [6+5+5]

8. Name different cells and other constituents of blood under normal conditions and add a note on their deviations in abnormal conditions with reference to any two parameters. [16]

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1. (a) How the conductivity of an electrolyte is measured experimentally?  
(b) Explain the mechanism of addition polymerization with suitable examples. [8+8]
2. Discuss the manufacture, properties and uses of  
(a) Teflon  
(b) PVC. [8+8]
3. (a) Describe boiler troubles. And how do you overcome them?  
(b) Define softening. Explain the lime-soda method of softening. [8+8]
4. (a) Differentiate between prokaryotic and eukaryotic cells with suitable examples.  
(b) Explain the composition of cell walls of prokaryotic cells. [8+8]
5. (a) Give classification of enzymes based on their action with suitable examples.  
(b) Explain the extraction and purification of an enzyme from tissues. [8+8]
6. What is oxidative deamination? Describe the fate of amino acids after their absorption. [16]
7. Write short notes on:  
(a) Plasma cholesterol  
(b) Proteinuria  
(c) Anaemia. [5+5+6]
8. Write short notes on:  
(a) Serum albumin and Globulin  
(b) Creatine and Creatinine  
(c) Blood glucose. [6+5+5]

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